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The Relationship of Cryptocurrencies and the Stock Market

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Abstract: In today's world, with the internet and finance closely integrated, the global-ization of cryptocurrency has deepened, prompting people to pay more atten-tion to the impact of cryptocurrency on the entire financial market. This pa-per provides a comprehensive review of relevant literature from five aspects: the development of cryptocurrency, price changes, the impact of cryptocur-rency on the stock market, the impact of cryptocurrency on the banking in-dustry, and the currency and commodity characteristics of cryptocurrency. The author also compares the price curves (in USD) of the S&P 500, ETH, and BTC from March 21, 2022, to March 21, 2023, and hopes to gain in-sights into the relationship between stocks and cryptocurrencies. Our re-search shows that the emergence of cryptocurrency has had a significant im-pact on the financial market, particularly in the banking industry. Although the emergence of cryptocurrency has added vitality to the financial market and increased investment options, the instability of cryptocurrency has also brought risks to investors. As the cryptocurrency market continues to ex-pand, policymakers and investors need to understand its potential impact on traditional financial instruments and the broader economy.

Keywords: ETH, BTC, cryptocurrency

1. Introduction

In recent years, cryptocurrency has gained widespread popularity as a new form of currency, and the cryptocurrency market has continued to expand. Cryptocurrency uses hash algorithms, blockchain technology, and other technologies to protect transactions and control the generation of units, which avoids regulation by third-party institutions and ensures the security of transactions. Because of its low trans-action costs and other characteristics compared to traditional finance, cryptocurren-cy has quickly become popular worldwide [1-3]. Bitcoin is the most widely recog-nized and traded cryptocurrency, which was introduced in 2009. Since then, various new cryptocurrencies have gradually entered the market. With unique features such as anonymity, decentralization, and low transaction costs, cryptocurrency has the potential to disrupt the current financial market and change the way financial trans-actions are conducted.

The study of the impact of cryptocurrency on the financial market can benefit multiple groups. Firstly, policymakers need to have a sufficient understanding of the cryptocurrency field to correctly grasp regulatory standards [4]. Secondly, for inves-tors, understanding this new investment tool can make their investment portfolio more diversified and help them avoid some risks [5-6]. Academics can also benefit from rich research results in this field. Although many research papers have been

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produced in the financial field during the ten years since the virtual currency was developed, there are still some gaps. For example, xx's research confirms the link between the stock market crash effect and the cryptocurrency market, xx's research shows that the currency of current cryptocurrencies is not yet complete, and xx's paper concludes that the changes brought about by cryptocurrency to the banking industry are revolutionary. However, there are relatively little complete literature and related research on the impact of cryptocurrency on commodities and the overall financial industry.

This paper will use a mixed method, including a literature review and empirical analysis. The literature review will study existing literature on the impact of crypto-currency on the financial market. The literature review method is effective in this paper because cryptocurrency's impact on the financial market is a relatively new research field, and using this method can establish a comprehensive understanding and critical evaluation of this field. The empirical analysis will involve using statis-tical methods to analyze the impact of cryptocurrency on stocks.

The author will analyze the price changes of cryptocurrency starting from the de-velopment of Bitcoin in this paper. The impact of cryptocurrency on stocks, the banking industry, and the currency attributes of Bitcoin will be discussed in detail. Finally, we will discuss the future development and challenges of cryptocurrency and the potential risks and benefits of cryptocurrency on the financial market.

2. Case analysis

2.1. Bitcoin Development

In 2008, the global financial crisis caused strong doubts among the public about the coordination ability and credibility of governments, banks, and financial institutions in economic development. Later that year, Mr. Satoshi Nakamoto first proposed the concept of blockchain transactions in a cryptography mailing list, and the concept of Bitcoin as a currency was also introduced. This currency does not have a centralized issuer and is generated by the calculations of network nodes, making the Bitcoin system completely devoid of third-party supervision. The transaction information is only known to the two parties in a peer-to-peer system. At the same time, as an open-source code system, its code's replicability and modifiability make it easy to create new currencies. This may be an important reason why the number of crypto-currencies continues to grow in the future.

From 2011 to 2013, Bitcoin gradually attracted public attention, and its price slowly increased. However, in 2014, some countries began to regulate and restrict Bitcoin for the first time, causing panic among the public, and the market's enthusi-asm for Bitcoin cooled.

At the end of 2017, Bitcoin's price soared again and reached its highest value since its inception. However, in 2018, due to more countries regulating and restrict-ing Bitcoin, its legal status was disputed, and its price continued to decline.

In 2020, Bitcoin experienced strong price fluctuations. In the first month of the year, it maintained growth, but in the following two months, due to the outbreak of the COVID-19 pandemic and currency policies, Bitcoin's price experienced a sharp decline. However, at the end of March, Bitcoin's price rebounded and stabilized be-tween $9,000 and $12,000 from May to August. By the end of the year, Bitcoin en-tered a bull market, and its price broke through its historical high of $20,000 in 2017. In January 2021, it reached a new historical high of nearly $42,000. After a small-scale decline, its price has remained above $50,000. In May, due to the Chi-nese government's ban on Bitcoin trading and mining, Bitcoin experienced a sharp decline, with a drop of nearly 40% within two months. Later, Bitcoin's price experi-enced two rounds of upward trends and stabilized at around $50,000 by the end of 2021.

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2.2. Analysis of Bitcoin and ETH Prices and S&P 500 Index

Using the daily data of Bitcoin-USD and ETH-USD exchange rates and the S&P 500 index from Yahoo Finance between March 21, 2022, and March 21, 2023, we found that the prices of ETH and BTC are highly correlated, with relatively dramatic price changes. From the end of March to May 2022, both ETH and Bitcoin experienced significant declines, followed by gradual rebounds in June, and then their prices fluctuated slightly and stabilized in a range. In contrast, the S&P 500 index showed an overall downward trend with some fluctuations. However, compared with ETH and BTC, the price fluctuations were more stable, indicating that the US stock mar-ket overall showed a relatively stable trend.

3. Analysis of the Impact and Attributes of Cryptocurrencies on the Traditional Financial Industries

As the cryptocurrency market continues to develop, its relationship with traditional financial markets, especially the stock market, has attracted wide attention from scholars, investors, and regulatory agencies. Although many studies have shown that there is a correlation between cryptocurrency and the stock market, the specific de-gree of impact is closely related to factors such as region, breadth, and depth of the stock market.

For example, Minasami demonstrated through the GMM method that cryptocur-rency has a positive effect on Gulf countries in Central Africa and the Middle East, while it has a suppressive effect on non-Gulf countries. However, due to the unique geographical and cultural characteristics of this region, this conclusion may not be applicable to global stock markets. In addition, the larger and more diverse the stock market, the less it is affected by the volatility of the cryptocurrency market.

On the other hand, some investors hope to use cryptocurrency to hedge against the risks of the stock market. However, research has shown that cryptocurrency cannot stably resist financial risks. During the COVID-19 pandemic, the linkage between cryptocurrency and the financial market was low-frequency, but there was a high-frequency linkage in March when the financial market panicked. Therefore, during the crisis period, cryptocurrency may spread risks to the stock market, and using cryptocurrency to hedge risks will increase costs without bringing higher returns [7].

Although current research indicates a relatively weak spillover relationship be-tween the cryptocurrency market and the stock market, the study of the Bitcoin price change rate has reference significance for the stock market. In addition, researchers have found that the peak value of the spillover effect between the cryptocurrency market and the stock market will be affected by policy adjustments or events such as cryptocurrency collapse.

Banks are intermediaries in traditional financial transactions, providing services such as loans, savings, and payment processing and earning revenue from them. However, government monopolies in the banking industry have drawbacks, such as adjustments to reserve interest rates by the Federal Reserve that may trigger infla-tion, causing a decline in the purchasing power of the US dollar and affecting citi-zens' living standards. Massive reserve funds can also affect government tax reve-nues and public welfare spending [8]. Cryptocurrencies, on the other hand, use mathematical algorithms to achieve tamper-proofing and inflation control, which provides them with more stable purchasing power and anti-counterfeiting capabili-ties and can address these issues.

In addition, traditional bank-issued physical currencies have a large difference in face value and are often denominated in decimal units, which increases complexity in certain trading centers. The high divisibility of cryptocurrencies can reduce trans-action difficulty.

Cryptocurrencies also have an impact on traditional banking industry forex trans-actions. Cryptocurrencies can serve as a simplified global currency that can be trad-ed anywhere in the world in the future, eliminating additional costs associated with foreign exchange. Cryptocurrencies use

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blockchain technology to achieve peer-to-peer transactions, eliminating the time cost of coordinating multiple systems, and can complete work that takes traditional banks several days to complete in just a few hours [9-10].

However, the use of cryptocurrencies also carries potential risks. Some criminals may use cryptocurrencies to evade taxes or launder money, and such criminal behav-ior is more difficult to track and identify than with traditional banks.

Therefore, the impact of cryptocurrencies on the traditional banking industry is dual. They bring convenience and stability, but also potential risks and challenges. In the future, banks and cryptocurrencies may compete with each other, but it is more likely that they will merge to better serve customers' needs.

When studying whether cryptocurrencies belong to the category of currency, re-searchers often analyze whether they possess the three basic functions of a currency: value storage, transaction medium, and unit of account. Currently, Bitcoin does have the function of a transaction medium, as people can use Bitcoin to purchase physical goods or NFT products. However, it is evident that in the Bitcoin market, physical transactions only account for a small portion, and the majority of transactions are speculative behaviors of investors. What is more noteworthy is the length of time it takes to conduct transactions using cryptocurrencies. Although peer-to-peer crypto-currency transactions seem to remove third-party entities, the transaction time should be reduced. However, due to protocol issues in the underlying software, Bitcoin can only handle a limited amount of electronic transactions. As of January 4, 2018, the maximum daily transaction volume of Bitcoin was only about 425,000 transactions. The global daily volume of electronic transactions far exceeds this value, and Bitcoin's current transaction processing speed may not be able to handle the responsibilities of a world currency.

Another important difference between cryptocurrency as a transaction medium and traditional currency is that the prerequisite for using cryptocurrency is that the user must hold this type of currency, and it cannot be used like credit card payments. As for value storage, since people currently value the speculative nature of crypto-currencies more, it is difficult for cryptocurrencies to maintain a relatively stable range, even with greater volatility than some high-risk stocks. Moreover, the mini-mal spillover effect between cryptocurrencies and other traditional financial prod-ucts such as stocks, means that cryptocurrencies are unlikely to achieve the purpose of hedging risk. The accounting function of cryptocurrencies is also debatable be-cause their distributed accounting method requires all users to trust the blockchain contract creator. After incidents such as the massive theft of Bitcoin from the world's largest Bitcoin exchange, Mt.Gox, in February 2014, people cannot com-pletely trust cryptocurrency trading institutions. Additionally, it can be difficult to use high-priced Bitcoin as a unit of account when pricing goods.

Therefore, the currency attributes of today's cryptocurrencies are incomplete. In other words, Bitcoin's behavior falls between legal currency and encrypted commod-ities used for transactions.

4. Discussion of the Pros and Cons of Cryptocurrency: Evaluating Security Risks and Future Potential

As a new form of currency, cryptocurrency has many advantages. Firstly, it provides anonymity and high encryption, making transactions safer for users. Secondly, the use of blockchain technology for distributed ledger ensures that transaction data cannot be tampered with, while also providing a traceable record for peer-to-peer transactions. This eliminates the need for third-party regulators, ensuring privacy and efficiency for users. In addition, the use of cryptocurrency eliminates the need for additional fees and hassle associated with currency exchange in cross-border transactions.

However, the negative impact of cryptocurrency on global security cannot be un-derestimated. The anonymity of cryptocurrency provides opportunities for terrorists to purchase weapons and

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engage in illegal activities, while financial criminals may use it for money laundering. Furthermore, the strong volatility of cryptocurrency can lead to significant impacts on the global financial market if a collapse occurs.

In the author's opinion, the future of cryptocurrency should focus on providing transaction services rather than being a speculative tool. Improvements in the set-tlement system are necessary to increase efficiency and daily trading volume, which is meaningful for cryptocurrency to expand into larger markets. Additionally, gov-ernments and institutions around the world need to improve their regulation of cryp-tocurrency by establishing unified standards and supervisory mechanisms to combat terrorism and stabilize cryptocurrency prices.

5. Conclusion

Over the past decade, cryptocurrency has gained significant attention, with Bitcoin being the most widely recognized and traded digital currency. This new form of decentralized currency challenges the traditional financial system, particularly in terms of its impact on the financial market. With its unique features such as ano-nymity, decentralization, and low transaction costs, cryptocurrency has the potential to disrupt the current financial market and change the way financial transactions are conducted. The impact of cryptocurrency on the financial market has become a topic of debate. While cryptocurrency has disrupted the financial balance of the industry, it has also brought new risks and challenges.

This article explores the impact of cryptocurrency on the financial market, dis-cussing in detail its effects on the stock and banking industries, as well as whether cryptocurrency should be classified as a currency. Through an analysis of previous literature, it is found that cryptocurrency has little correlation with the stock market, and investors are unable to hedge financial risks through cryptocurrency. However, the banking industry has been strongly impacted by the introduction of cryptocur-rency, with credit business and cross-border transactions becoming more convenient. In terms of the currency attributes of cryptocurrency, current cryptocurrency is una-ble to fulfill all the responsibilities of legal currency. However, with the improve-ment of cryptocurrency regulatory systems in the future, cryptocurrency may com-plete the transformation into a global currency.

Although this article discusses the impact of cryptocurrency on several traditional financial fields, research on the relationship between cryptocurrency and commodi-ties is still limited. This article did not cover the impact of cryptocurrency on com-modities, but future research plans to explore this area.

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